

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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## CLAIMS

1. A graphic user interface method for defining a database query output representation operation parameter, comprising the steps of:  
graphically representing an output representation operation of a database operation on a data set, said graphic representation having a graded representation portion;  
receiving from the user a manipulation of the grade of the graded representation portion;  
translating the manipulation of the graded representation into a database operation parameter; and  
receiving an output database set from the database in accordance with the database operation parameter, a relative arrangement of members of the output database set being responsive to at least a manipulation of said graded representation portion by the user.
2. The method according to claim 1, wherein said data set comprises free form text.
3. The method according to claim 1, wherein said user inputs a database query comprising Boolean search parameters.
4. The method according to claim 1, wherein said graphic representation comprises a bulls'-eye.

5. The method according to claim 1, wherein said graphic representation comprises a pyramid.
6. The method according to claim 1, wherein said manipulation comprises a gesture.
7. The method according to claim 1, wherein said manipulation comprises selecting a start position within the graded representation portion and subsequently displacing a graphic cursor with respect thereto.
8. The method according to claim 1, further comprising the step of receiving a database operation parameter comprising at least one numerical operator defining an expansiveness of a set inclusion property.
9. The method according to claim 1, wherein said database operation parameter comprises a statistical parameter.
10. The method according to claim 1, wherein said database operation parameter modifies a presentation of results of a Boolean search expression.
11. The method according to claim 1, further comprising the step of receiving a database operation parameter through manipulation of a graded representation portion, which modifies a set inclusion property of a Boolean search expression.
12. The method according to claim 1, further comprising the step of receiving a database operation parameter through manipulation of a graded representation portion, which modifies a non-Boolean search parameter of the database.
13. The method according to claim 1, wherein the user manipulation comprises a gesture for affecting a relative size, shape or position of the graded representation portion.

14. The method according to claim 1, wherein the database operation parameter comprises an output ranking.

15. The method according to claim 1, further comprising the steps of receiving a further database operation parameter from the user through manipulation of a graded representation portion, the database operation parameter and further database operation parameter being selected from one or more of the group consisting of a set inclusion property and a set ranking property, which together determine and arrange the output set.

16. The method according to claim 1, wherein a set inclusion criterion of the output database set is based on an intrinsic characteristic of the elements of the database, and a ranking of members included in the output set is based on a characteristic extrinsic to the members of the output set.

17. The method according to claim 1, further comprising the steps of:  
receiving an database operation parameter to define the output set;  
representing the output database set as a second graphic representation having a graded representation portion;  
receiving from the user a manipulation of the graded representation portion of the second graphic representation; and  
translating the manipulation of the graded representation of the second graphic representation into a second database operation parameter for operation on the output set.

18. The method according to claim 1, wherein said graphically representing step is adaptive to a style of the user.

19. The method according to claim 1, further comprising the step of altering the functioning of the graphic user interface based on preferences of the user, the preference being derived from monitoring the past activities of the user.

20. The method according to claim 1, further comprising the step of transmitting the

database operation parameter through a computer network to a remote database server.

21. The method according to claim 1, wherein:  
said graded representation portion comprises at least one graphic control having a linear depiction; and  
said manipulation comprises a movement of a graphic element along the linear depiction.

22. The method according to claim 1, wherein:  
said graded representation portion comprises a plurality of graphic controls, arranged in an array and each having a linear depiction; and  
said manipulation comprises a movement of a graphic element along the linear depictions.

23. The method according to claim 1, wherein the database membership comprises a set of referential data records, each having an identifier, and content information, at least a portion of said set of referential data records being referenced by other data records, further comprising the step of sorting identifiers of the data records included as members of the output set based on a primary search criterion and an analysis of a relation of references of the database.

24. A computer readable storage medium having therein computer instructions for controlling a computer to perform the method of claim 1.

25. A method for using a graphic user interface for defining an output arrangement criterion for an automated query response system, comprising the steps of:  
receiving from the user, through the graphic user interface, a signal relating to a graded manipulation of at least one quantitative graphic representation of an output arrangement criterion;  
transmitting electronic data representing the manipulation of the quantitative graphic representation to an automated query response system; and  
receiving a response from the automated query response system, comprising a plurality of items arranged relative to each other depending on the at least one output arrangement criterion,

said output arrangement criterion being independent of a query defining the plurality of items.

26. The method according to claim 25, wherein the quantitative graphic representation comprises a scale, wherein a user selects a desired quantitative value based on a manipulation of the scale.

27. The method according to claim 25, wherein the automated query response system comprises a search engine.

28. The method according to claim 25, wherein the electronic data is transmitted over the Internet.

29. The method according to claim 25, wherein the output criterion comprises a sort criterion.

30. The method according to claim 25, wherein the output criterion comprises a ranking criterion.

31. The method according to claim 25, wherein the quantitative graphic representation comprises both an output arrangement criterion and a quantitative modifier for a semantic query.

32. The method according to claim 25, wherein the automated query response system operates on data records comprising records having links to other data records or records which are linked to by other data records, a ranking of data records represented in the response being dependent on the links to or from other data records.

33. A tangible computer readable storage medium having embodied therein computer instructions, such that, when executed on a computer, cause the computer to perform the method of claim 25.

34-39. (Cancelled)

40. A graphic user interface method for defining database query definition and output representation operation parameters of a database, comprising the steps of:

graphically representing a predefined icon of the graphic user interface for defining an output representation operation on the data set, said icon having a graded representation portion;

receiving from the user a manipulation of the grade of icon; and

translating the manipulation of the grade of the icon into a database output representation operation parameter for the database; and

receiving the output database set and displaying its relative arrangement at least in accordance with at least the output representation operation parameter.

41. The graphic user interface method according to claim 40, wherein:

a plurality of predefined icons, each representing a respective output representation operation on the data set are provided;

said manipulation receiving step receives from the user a manipulation of the grade of a plurality of icons;

said translating step translates the manipulation of the icons into a plurality of database output representation operation parameters for the database;

said output receiving step receives the output database set in accordance with the output representation operation parameters, and

an arrangement of members of the output set is dependent on said plurality of database output representation operation parameters.

42. A graphic user interface method for defining database query definition and output representation operation parameters of a database, comprising the steps of:

graphically representing an output representation operation on the data set, said graphic representation having a plurality of graded representation portions;

receiving from the user a manipulation of the grade of a plurality of graded representation portions;

translating the manipulation of the graded representations into a plurality of database

output representation operation parameters for the database;

receiving the output database set in accordance with the output representation operation parameters; and

arranging members of the output set in dependence on said plurality of database output representation operation parameters.

43. A method for using a graphic user interface for defining an output arrangement criterion for an automated query response system, comprising the steps of:

receiving from the user, through a pointing device of a graphic user interface, a signal relating to a manipulation of a value of at least one multivalued graphic representation of a desired output arrangement criterion;

transmitting electronic data representing the manipulation of the quantitative graphic representation to an automated query response system; and

receiving a response from the automated query response system, comprising a plurality of items arranged relative to each other depending on the at least one output arrangement criterion, said output arrangement criterion being independent of a query defining the plurality of items.

44. The method according to claim 43, wherein the multivalued graphic representation comprises a plurality of multivalued graphic representations, each being separately manipulated through the pointing device by the user.

45. A method for using a graphic user interface for defining an output arrangement criterion for an automated query response system, comprising the steps of:

receiving, through a graphic user interface, a signal relating to a manipulation of a value represented by at least one multivalued non-text graphic representation having at least three states, representing a desired output arrangement criterion;

transmitting electronic data representing the manipulation of the quantitative graphic representation to an automated query response system; and

receiving a response from the automated query response system, comprising a plurality of items arranged depending on the at least one output arrangement criterion, said output arrangement criterion being independent of a query defining the plurality of items.

46. The method according to claim 45, wherein the multivalued non-text graphic representation comprises a plurality of multivalued non-text graphic representations, each being separately manipulated.

47. The method according to claim 25, wherein the at least one quantitative graphic representation comprises a plurality of quantitative graphic representations, each being separately graphically manipulated by the user.